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ABSTRACT

Questions are repeatedly raised about equality and equity in the education system. Teachers, policymakers, and parents have an interest in monitoring educational provision and outcomes in relation to various pupil groups, one of the most obvious being gender. To identify recent trends in the relationships between gender and attainment in Scotland, the Scottish Office Education and Industry Department commissioned a review of research and statistics about pupils' attainment by the time they leave school. The period covered was 1985-1995. This report comments on three factors connected with gender differences in attainment: (1) the effects of bias in assessment and teaching; (2) influences of home and society; and (3) the interaction between class, ethnicity, and gender in achievement. Offers suggestions for teaching that take into account differences in social class, ethnicity, and gender. Contains 24 references. (BT)

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SCRE Spotlights 64
From The Scottish Council for Research in Education

Trends in Gender and Attainment in Scotland

Janet Powney

The Scottish Council for Research in Education

Questions are repeatedly raised about equality and equity in the education system. Teachers as well as policymakers and parents have an interest in monitoring educational provision and outcomes in relation to various pupil groups, one of the most obvious being gender. In order to identify recent trends in the relationships between gender and attainment in Scotland, the Scottish Office Education and Industry Department commissioned a review of research and statistics about pupils' attainment by the time they leave school. The period covered was 1985–1995. The report is available from SCRE (Powney 1996). This Spotlight summarises some of the key facts and factors about gender differences and attainment and comments on the implications for schools and the education system.

The review aimed to identify trends in the relationships between gender and attainment in Scotland from 1985 to 1995, drawing on research studies and statistics about the attainment of boys and girls by the time they leave school. The focus was on three questions:

- what are differences in attainment between boys and girls in primary and early secondary school?
- what is their relative performance in public examinations?
- what are the differences in staying-on rates and uptake of further and higher education?

Gender differences in attainment persist at all levels of education but these differences are not always consistent with employment patterns and outcomes of higher education. Although girls in the UK stay on longer at school than boys and leave school with better qualifications, there are fewer girls taking up apprenticeships or obtaining first class degrees. Despite more women (52%) than men (48%) qualifying in higher education in 1995, a higher proportion of men (8%) than women (6%) gained a first class honours degree in 1995 (Scottish Office 1997). Nevertheless this represented a greater improvement for women over the previous decade.

These figures show some of the paradoxes in gender and attainment. Males gain most of the higher education top awards but the trend is for girls in general to do better in public examinations than boys – differences which are apparent in the earlier years of schooling. Consequently current concerns about schooling are now more related to boys' under-achievement (as demonstrated in public examinations) than to that of girls. The question is whether such outcomes at school and higher education reflect approaches to assessment, methods of teaching, and/or expectations of society.

SOME FACTS

► In the decade considered, there is relatively little research about gender and attainment in Scotland. Such as there is has focused largely on girls' perceived under-achievement and is restricted primarily to English, maths and science.

► Over the period there has been a steady increase in the number and level of school leavers' qualifications and a corresponding reduction in the percentage of pupils leaving without any qualification. In Scotland, girls make up more Standard Grade and Higher Grade entries than boys and on average attain slightly better grades overall, as the table below shows. At the highest school attainment levels in Scotland, 4% more of girls than of boys left with five or more Higher Grades. There are subject differences. For example girls do particularly well in language and communication and creative subjects at Standard Grade and boys do consistently better in one subject, physical education. Girls' relative performance in Higher Grade mathematics was better than boys for the first time in 1995.

Highest SCE qualification obtained, by sex (percentages)

Highest SCE qualification	Total	Boys	Girls
5+ Higher Grades	17	17	18
3–4 Higher Grades	13	11	14
1–2 Higher Grades	15	13	17
5+ Standard Grades 1–3	8	8	8
3–4 Standard Grades 1–3	9	9	9
1–2 Standard Grades 1–3	15	14	14
Standard Grades 4–7 only	15	17	13
None	9	10	7
n =	*4851*	*2506*	*2345*

Source: Lynn (1995)

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► There are gender differences in curriculum choices. For example, twice as many boys as girls took computing studies at Standard Grade and four times as many at Higher Grade (Cole 1994). The introduction of the curriculum framework has meant there should be no gender difference over the time spent participating in languages at S3–S4 but nevertheless girls perform better on average than boys (Croxford 1994). Whereas less than a third of entrants for physics and physical education for Standard Grade in 1994 were girls, more than two thirds of entrants for biology, home economics and office studies were girls.

► Within subjects, there are also differences in attainment. For example, girls usually do well on coursework; boys' grades are more variable than girls' in some elements such as problem-solving in science. At Standard Grade, few girls attempt physics but those who do achieve better grades than the boys. However this is not true for the 30% of entrants in physical education who are female and did not achieve better grades than boys in 1994. Although the girls did better in knowledge and understanding, overall they attained .47 of a grade worse in practical performance. When only a small number of boys enter for subjects at Standard Grade, they do not achieve as high grades as girls.

► Longitudinal studies (SO/AAP 1988,1993; Napuk *et al* 1993; Gipps and Murphy 1994; White 1995; Sammons 1995; Johnson 1995) show that school leavers' achievements in public examinations generally reflect the progress of pupils throughout their school career in the core subjects of English language, mathematics and science with girls gradually pulling ahead to outperform boys at age 16. (Little attention has been paid to monitoring areas other than these core subjects.) The Scottish Assessment of Achievement Programme of pupils in Primary 4, Primary 7 and Secondary 2 shows that, on the whole, girls have superior performance in reading, writing and talking. Generally boys and girls did equally well in maths or science in the primary school but by S2 there were significant differences in some of the assessment tasks in both subjects. For example, S2 boys scored higher than girls on science tasks which covered recall *and* explanation but, overall, girls were better at tasks which required handling information, observation, inferring and investigative skills.

► Over the period, the trend has been for more young people to stay on at school, or participate in other forms of education and training, after compulsory school age. It is important to bear in mind that there are a range of factors which increase the attraction of staying on at school and the motivation to gain qualifications. For example, there have been: substantial unemployment for people of all ages, reductions in the availability of long-term apprenticeships schemes and changes in financial support available for young people. Across the UK, in general, girls stay on longer at school, leave with better qualifications than boys and are more likely to continue their education after leaving school. In 1983–84 29% of boys and 23% of girls left school with no qualification; in ten years these reduced to 10% of boys and 8% of girls leaving without a qualification. At the other end of the scale, the increase in the percentage of pupils with five or more Higher Grades (A–C) increased from 11% of both boys and girls in 1983–84 to 16% of boys and 20% of girls in 1993–94.

► More boys than girls go into full-time jobs and take up training and apprenticeship opportunities likely to lead to further vocational qualifications.

FACTORS ASSOCIATED WITH THESE DIFFERENCES

■ Teaching and assessment

Avoidance of bias. A possible cause of gender differences in attainment could lie in bias in assessment and in relation to differences in how boys and girls tackle assessment tasks. For example, when a group (of boys, let us say) performs less well on a test (than a group of girls) is this due to real differences in performance or because the examination itself is biased in some way? ie, is it that boys really are less able and not that tests are biased against them? Fairly recent evidence in Scotland (Ganson and De Luca 1995) indicates that questions in Standard Grade papers for 1993 were, overall, gender-balanced and avoided stereo-typing in language and roles where males and females were portrayed. There were subject differences within languages: for example, German and Italian papers being more stereo-typed in their portrayal of gender than English and French papers.

Approaches to assessment tasks. Avoidance of bias seems easier to tackle than more long-standing differences in the ways males and females approach assessment tasks. For example, most studies in the UK and elsewhere show that girls do well in essays and course work and less well at multiple-choice questions where boys do better than girls. Boys tackle more multiple-choice items and seem more confident, more willing to guess and to risk being wrong. In contrast, girls are less likely to take risks, are reluctant to guess, preferring to give no response or 'don't know' rather than guess. Has schooling discouraged girls from taking risks and encouraged them to answer questions only when they are confident of being correct? Studies in Northern Ireland (D'Arcy 1994: Trew *et al* 1994) found that boys and girls approached learning mathematics differently. Compared with girls, boys seemed to behave more like adult mathematicians, depending less on their teachers and being more likely to devise their own methods and short cuts.

Interaction with the teacher. These different approaches to assessment and to subjects are likely to be influenced by the teaching methods used and there has been considerable research into the ways teachers interact differently with boys and girls even from an early age. Children's interaction with each other is also affected by the gender composition of their working groups. Among the most recent work in Scotland, Howe (1997) has demonstrated gender differences in a range of common classroom situations – whole class discussion and group work which is desk-based and around computers. Previously, Dossey et al (1988) refer to

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the different treatments and opportunities of male and female students and how teachers challenge boys and not girls during questioning sessions. The GTC's gender policy advises teachers to be aware that responding to pupils in ways which stereotype them, can endorse passive behaviour in girls and lead to more attention being paid to 'clamorous boys' (GTC, 1991).

■ *Home and society*

However gender differences in success at school are not the sole responsibility of schooling. Society, and in particular parental aspirations and expectations, are key factors in progress both at school and in later life. Once we get into the spheres of home and school influences on attainment, few generalisations can be made since there is little research which focuses on the interactions of crucial variables namely gender, class and ethnicity.

Although Sammons *et al* (1983) identified seven factors which can be used to predict the statistically increased risk of low attainment at age 11, poverty is the most obvious key feature and one which has a clear impact on reading and maths attainment across not only gender but also ethnic groups. Although schools are often described as 'safe havens' for young people whose families are living through difficult circumstances, children from poor areas are more likely to suffer health problems, absence from school – condoned and otherwise – and attend schools in areas characterised by unemployment, high incidence of one parent families and low resource-bases for the schools themselves. As Sammons and her colleagues said, rather than a single factor being important, it is the cumulative disadvantage accrued from several factors which affects pupils school attainments. It is well known that there is a positive relationship between socio-economic status and educational attainment. However, what we do not know is why within each social class the same overall differences in attainment between boys and girls remain.

School effects. Some speculation has focused on areas of learning which are more, or less, dependent on what happens at school. Sammons (1995) has argued that differences on entry to school can be ascribed to home influences and improvements in attainment are due to school influences. By tracking a cohort of pupils in inner London, Sammons was able to show that girls outperformed boys in traditional tests of reading and, by age 10, in maths, going on to make greater gains than boys at GCSE. (These figures are comparable with the Scottish situation.) These pupils were from comparable socio-economic backgrounds and Sammons concluded that maths attainment is less susceptible than reading to home influences. Girls tend to be more conscientious pupils and their background becomes relatively less important in determining their maths attainment as they move up the school system.

Parents' level of education. Although there are established correlations between parents' own level of education and their children's attainment, Paterson (1992) suggests that there needs to be closer investigation of any different effects on boys and girls. Certainly one might expect that cultural expectations about men and women are likely to affect the expectations and aspirations that parents have for their sons and daughters. In the USA, Rumberger (1983) found that parents did not have the same effect on boys and girls in different ethnic groups: the higher the mother's level of education, the more likely black and white girls were likely to stay at school. However mother's level of education had little effect on white males or Hispanic youths.

■ *Interaction between class, ethnicity and gender*

Ethnic background. There is little work on differences in attainment among pupils from ethnic minorities in Scotland. There is some evidence from Gillies (1989) that bilingual boys from Asian backgrounds were under-achieving in English and probably 'language-heavy' subjects like history and geography in Standard and Higher Grade but official records are not kept to allow for analysis of ethnic minority pupils and, as yet, there has been little research in this area. Expectations and aspirations for males and females within each ethnic minority group will vary. Fuller (1980) found that a sample of lower-class black girls in London distanced themselves from black boys because they, the girls, had high aspirations for themselves and did not want to be ridiculed or held back by their peers. Eight years later, Eggleston (1988) reported that schools had avoided putting African-Caribbean pupils into academic or exam streams in case they were 'disruptive' or 'unrealistically ambitious'.

Take-up of higher education. Take-up rates of higher education in different ethnic and socio-economic groups have been difficult to track. Certainly the extent to which ethnic minorities pursue higher education in the UK varies with ethnic group – for example Chinese minority groups are relatively highly represented but Bangladeshi applicants have been consistently under-represented in both applications and admissions. Women from minority ethnic groups were significantly less likely to be admitted to UK HE institutions than men (Modood and Shiner, 1994). We know that the expansion of higher education has had little impact on the under-representation of students from our poorest communities. What is less clear is the extent to which class, ethnicity and gender inter-relate. Only recently, since the establishment of a unified approach to higher education, has there been a system to monitor the ethnic origins of HE students. It will be interesting to see the emerging patterns of these three dimensions (class, ethnicity and gender) together, rather than their being seen as single and (misleadingly) independent factors.

IMPLICATIONS

This paper has commented on three factors connected with gender differences in attainment – the effects of bias in assessment and teaching; influences of home and society

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and the interaction between class, ethnicity and gender in achievement. Over the long term, we need to collect and monitor more evidence in each of these areas to provide a basis for future action in teaching and assessment.

It is clear is that there is insufficient monitoring data to provide evidence of the relationships between gender, ethnicity and social class. Expansion of higher education in the university sector is making little difference to the class composition of entrants. Where there may be significant change is in further education where there have been rapid increases in the numbers taking HE courses on a full-time or part-time basis. It would be interesting to analyse the basis of such growth and to see if the increase is in terms of mature students (especially women) or perhaps among ethnic minority groups where parents are less willing to send their children away from home for their studies.

Parental aspirations and expectations are clearly linked with gender and social class and will affect pupils throughout their educational careers – the kinds of encouragement pupils are given to attend school, do their homework, choose options, proceed to further and higher education and employment. Even experiences before school help to determine children's self esteem and how they later see themselves as 'pupils'.

Educational attainment is the outcome of parents, pupils and school staff working in partnership. Where the educational community makes most contribution is in school and classrooms ensuring that school ethos and approaches to teaching and learning support the development of *all* pupils and do not ignore, but take into account, differences in social class, ethnicity and gender. Howe (1997) concludes that 'school experience does more than simple tolerate what already exists' (p47). It can endorse stereo-types and encourage gender divisions. This vision of the future is not one that we would willingly endorse but we need to ensure that it does not happen unwittingly.

However there are three actions that can be taken, now, by teachers at all levels of education:

- increase understanding and sensitivity of where practices could be disadvantaging males or females
- monitor ways of teaching and assessing students as well as students' own performance and attainment
- use the outcomes from these actions of increasing awareness and monitoring practices to embed equality of opportunity in learning and teaching.

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Note: The full report of the review is for sale from SCRE: Powney, J (1996) *Gender and Attainment – a review*.

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